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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/578,193

05/04/2006

Karin Cabrera

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EXAMINER

KENNEDY, TIMOTHY J

ART UNIT

PAPER NUMBER

4151

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/578,193	<b>Applicant(s)</b> CABRERA ET AL.	
	<b>Examiner</b> TIMOTHY KENNEDY	<b>Art Unit</b> 4151	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 May 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>05/04/2006 and 04/14/2008</u> .                               | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
4. Claims 1- 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishizuka et al (Preparation and Chromatographic Application of Macroporous Silicate in a Capillary), in view of Eguchi et al (U.S. Patent 5,145,579).
5. Regarding Claim 1, Ishizuka et al teach:

6. Process for the production of monolithic porous mouldings which completely fill their gelling mould (Bottom of 2nd column page 371 - Top of 1st column page 372; and Top of 1st column page 374)
7. Provision of a gelling mould (Figure 1 page 372)
8. Activation of the gelling mould by surface etching (Middle of 2nd paragraph 1st column page 372: 1 M NaOH solution)
9. Filling of the gelling mould with monomer sol (2nd paragraph 1st column page 372: A silica rod ... overnight at 40° C)
10. Polymerisation of the monomer sol and aging of the resultant gel for the formation of pores (2nd paragraph 1st column page 372: A silica rod ... overnight at 40° C)
11. However, Ishizuka et al do not teach the activation of the gelling mould by increasing the surface area and/or chemical modification. This is done to better adhere the sol-gel to the inner mould wall.
12. In the same field of endeavor, Eguchi et al teach the use of 3-(methacyloxy)propyltrimethoxysilane as a treatment for the wall of the mould, as the instant application discloses, which can increasing the surface area and/or chemical modification (column 6 lines 48-60)
13. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the 3-(methacyloxy)propyltrimethoxysilane as taught by Eguchi et al, in the Ishizuka method to activate the inner wall of the mould for better sol-gel adhesion.

14. Regarding claim 2, Ishizuka et al teach:

15. A gelling mould made from glass, glass-coated stainless steel or fused silica  
(Figure 1 page 372)

16. Regarding claim 3, Ishizuka et al does not teach the use of alkoxysilanes, organoalkoxysilanes, or slurries of particles to increase the surface area of the inner mould wall.

17. In the same field of endeavor, Eguchi et al teach the use of 3-(methacyloxy)propyltrimethoxysilane (column 6 lines 48-60), which is a member of the organoalkoxysilane family. As the instant application discloses the surface area of the inner mould wall can be increased with the use of a organoalkoxysilane.

18. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the 3-(methacyloxy)propyltrimethoxysilane as taught by Eguchi et al, in the Ishizuka method to increase the surface area of the inner mould wall.

19. Regarding claim 4, Ishizuka does not teach the use of a bifunctional reagent to chemically modify the inner mould wall.

20. In the same field of endeavor, Eguchi et al teach the use of bifunctional reagents (column 3 lines 16-29). As the instant application discloses the inner mould wall can be chemically modified using bifunctional reagents.

21. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the bifunctional reagents as taught by Eguchi et al, in the

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Ishizuka method to chemically modify the inner mould wall so that the sol-gel will mixture will have a better chemical bond with the wall ensuring minimal shrinkage.

22. Regarding claim 5, Ishizuka et al teach:

23. A sol-gel process is used for the production of the monolithic porous mouldings (2nd paragraph 1st column page 372: A silica rod ... overnight at 40° C)

24. Regarding claim 7, Ishizuka et al teach:

25. Monolithic porous mouldings which have been polymerized in their gelling mould. Using the previous combination from claim 1, it would be possible to create monolithic porous mouldings which have been polymerized in their gelling mould.

26. Regarding claim 8, using the combination from claim1, Ishizuka et al teach:

27. Chromatographic separation of at least two substances (Figure 3 page 373)

28. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishizuka et al in view of Eguchi et al as applied to claim 1 above, and further in view of Unger et al (Already of Record).

29. Regarding claim 6, the previous combination teaches the method of claim 1, but does not teach the use of particles, fibres, or organoalkoxysilane in the sol-gel to reduce shrinkage.

30. In the same field of endeavor, Unger et al teach the use of organoalkoxysilane in the sol-gel (column 2 lines 32-42).

31. Although Unger et al do not specifically recite that the inclusion of organoalkoxysilane in the sol-gel will reduce shrinkage (column 8 lines 40-43), it is well known to be an inherent property of organoalkoxysilane in sol-gel mixtures.

32. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the organoalkoxysilane as taught by Eguchi et al, in the Ishizuka method reduce shrinkage of the sol-gel.

### ***Conclusion***

33. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

34. U.S. Patent 4,169,790: Increasing the surface area of the inner wall of a chromatography column

35. U.S. Patent 4,376,641: Etching the inner wall and coating the inner wall of a chromatography column

36. U.S. Patent 4,865,707: The use of bifunctional reagents to activate the inner wall of a chromatography column

37. U.S. Patent 5,637,135: Coating the inner wall with alkoxysilane

38. Frantisek Svec, Eric C. Peters, David Sykora, Jean M.J. Frechet; Design of the monolithic polymers used in capillary electrochromatography columns, July 2000, Journal of Chromatography A, volume 887, pages 3-29:

39. Etching the inner wall for better sol-gel adherence

40. Nobuo Tanaka, Hiroshi Kobayashi, Norio Ishizuka, Hiroyoshi Minakuchi, Kazuki Nakanishi, Ken Hosoya, Tohru Ikegami; Monolithic silica columns for high-efficiency chromatographic separations, August 2002, volume 965, pages 35-49:

41. The concept of chemically modifying the inner wall to prevent shrinkage

42. Japan Published Patent Application JP 2002293657: The use of particles in the sol-gel (Already of Record)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIMOTHY KENNEDY whose telephone number is (571)270-7068. The examiner can normally be reached on Monday to Thursday 7:30am to 5:00pm, and every other Friday 7:30am to 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Angela Ortiz can be reached on (571) 272-1206. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

tjk

***/Angela Ortiz/***

***Supervisory Patent Examiner, Art Unit 4151***